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(54) Abstract Title

Controlling the use of portable cameras

(57) Apparatus for restricting and or prohibiting the use of a portable camera within a predetermined area, comprising a first unit 10 mounted in or on a portable camera (not shown). The unit 10 includes a receiver 12 for receiving periodic radio signals 14 from one or more transmitters 16 located remote from the camera within a predetermined area. When the receiver 12 receives a signal 14, it activates a disable module 18 which disables one or more of the functions of the camera while it is within the predetermined areas. The apparatus may also include a GPS tracking system 20 for tracking the location of the camera and may include an alarm module 22 for emitting an alarm in response to receipt of a signal 14 from the transmitter 16.

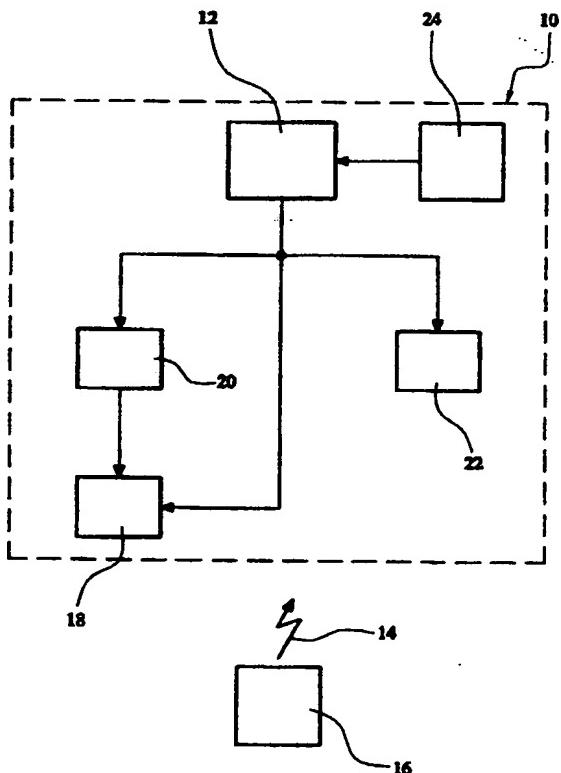


FIG. 1

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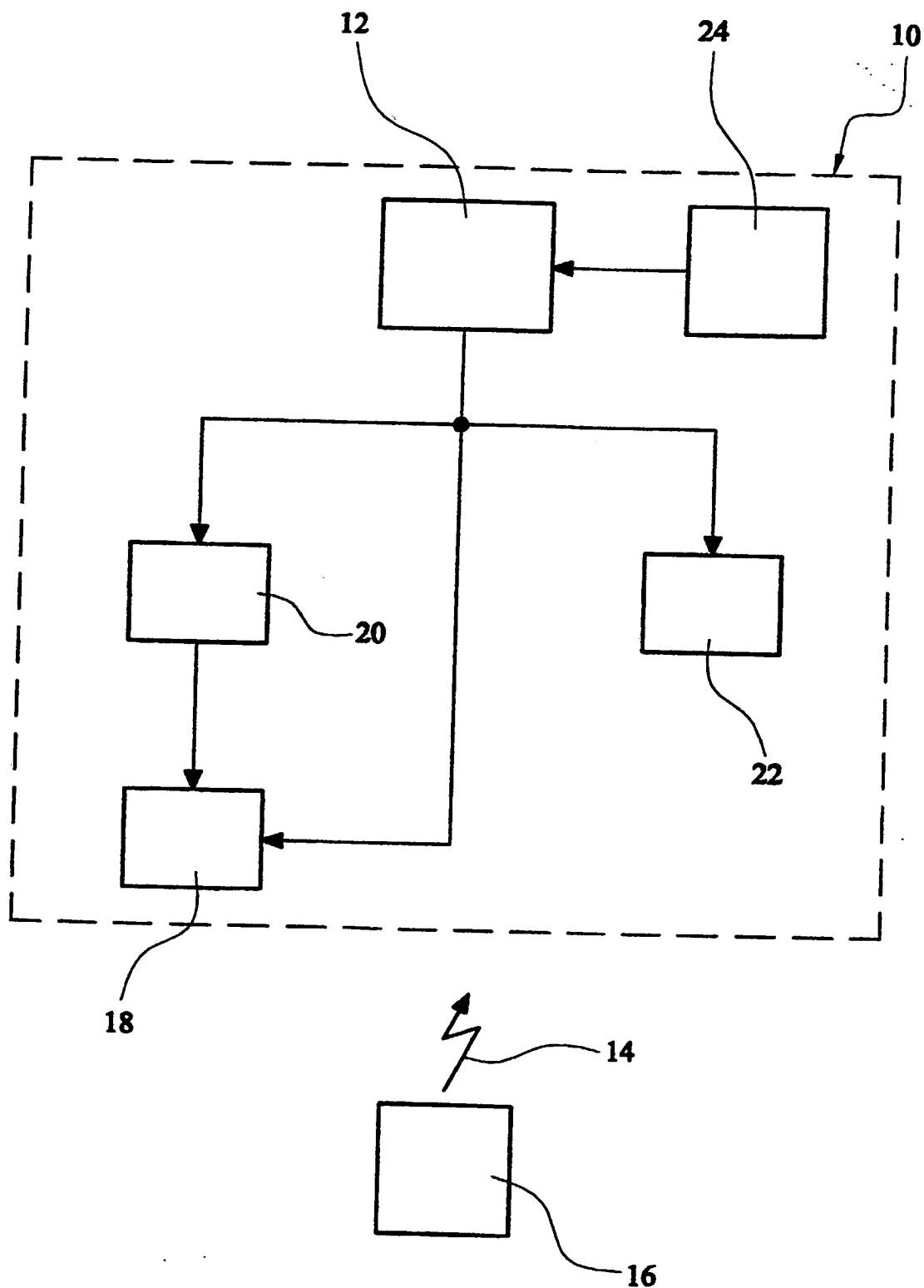


FIG. 1

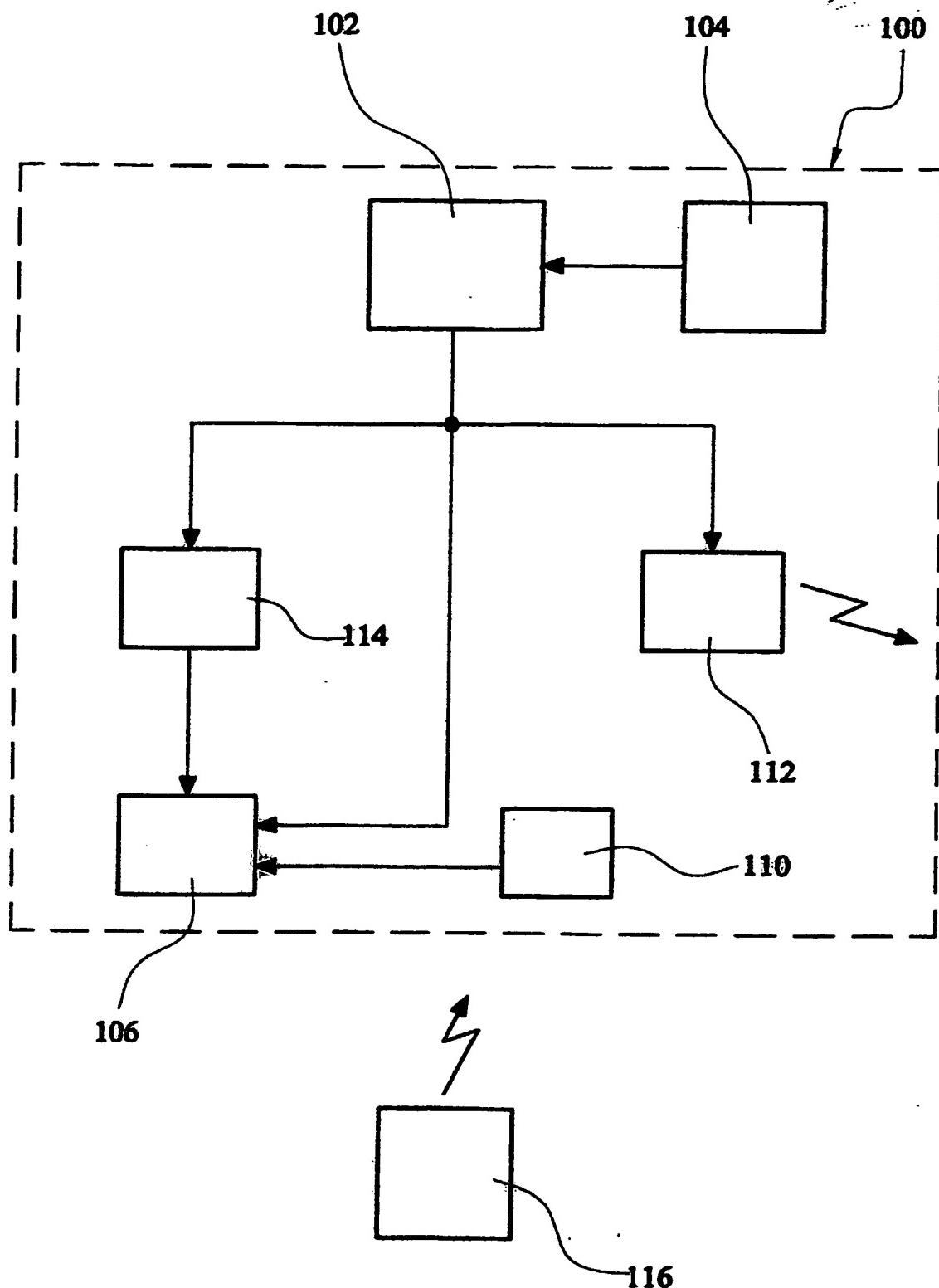


FIG. 2

PORTABLE CAMERAS

This invention relates to portable cameras and, in particular, to controlling the use of such cameras in certain specified locations.

Recent advances in technology are such that very small portable cameras are becoming increasingly common. Cameras have been developed which are embedded in mobile telephones or watches, or which can be worn in the manner of badges or glasses.

There are many situations and locations, such as business premises, museums, cinemas, lavatories, etc., where use of cameras is necessarily restricted or prohibited. In the past, such restriction and/or prohibition has been attempted to be achieved by displaying signs indicating the restriction or prohibition on photography in a specified location, and relying on individuals to adhere to such instructions. In some buildings, cameras are confiscated on entry thereto, which was relatively effective with regard to previous generations of cameras as they were relatively large and conspicuous when carried or used.

However, with the development of very small portable cameras, as described above, it is increasingly difficult to detect them being carried or used, making restriction or prohibition of photography in specified locations difficult to enforce.

We have now devised an arrangement which overcomes the problems outlined above.

In accordance with a first aspect of the present invention, there is provided a location control system for a camera, the system comprising a receiver unit mounted or mountable in or on said camera and a remote transmitter unit positioned within a predetermined area in which the use of camera is to be restricted, said receiver unit being arranged to control a function of said camera in response to a control signal received from said transmitter unit when said camera enters said predetermined area.

The first aspect of the invention extends to a method of

restricting the use of a camera within a predetermined area, the method comprising the steps of providing a receiver unit in or on said camera, providing a transmitter unit remote from said camera within said predetermined area, and controlling a function of said camera in response to a signal received by said receiver unit from the transmitter unit.

A number of (preferably low power) possibly radio transmitters are located around and/or within an area where use of cameras is restricted or prohibited. The transmitters emit periodic signals which, when received by the portable camera unit, cause one or more of the functions of the camera to be controlled accordingly.

If, for example, photography is permitted in an area, but flash photography is not, then the apparatus could just be arranged to disable the flash function of the camera. If, however, photography is prohibited within an area, then the apparatus could be arranged to disable the camera altogether while it is within that area.

Thus, for example, the transmitters may be arranged to transmit a signal once per second and, in response to receipt of such a signal, the camera unit may be arranged to disable one or more of the functions of the camera for, say, two seconds, such that those functions of the camera remain disabled until shortly after the camera is removed from within the predetermined area. Alternatively, the apparatus may be arranged to disable one or more of the functions of the camera until it receives another signal (possibly after the camera is removed from the restricted area) to re-enable it.

In yet another embodiment of the first aspect of the invention, the portable camera may be normally disabled, and enabled in response to a signal received from one or more transmitters in or around a predetermined area. Thus, such transmitters could be arranged to emit periodic signals to enable the camera whilst it is within the predetermined area, or the apparatus may be arranged to transmit an enabling signal on entry to the predetermined area and a disabling signal upon exit therefrom. In either case, the camera is arranged to be

enabled or active in a limited area or number of locations.

In one specific application, the apparatus may comprise a plurality of normally disabled cameras which operate as entry tickets or passes, or can be rented or sold to people on entry to, for example, a theme park. A plurality of transmitters located within the park transmit periodic signals to enable such cameras but, once the camera is removed from the park, it becomes useless because it is out of range of the necessary actuation signals, thereby providing a greater incentive for people to return the cameras when they leave the park.

In yet another embodiment of the first aspect of the invention, the apparatus may include means for tracking the location of a the camera within a predetermined area by, for example, detecting signals periodically transmitted by a unit within the camera, and for transmitting a signal to disable one or more of the functions of the camera as it enters a restricted zone. The apparatus may then continue to track the camera until it leaves the restricted zone and transmit a re-enabling signal accordingly.

In accordance with a second aspect of this invention, there is provided a location control system for a camera, the system comprising a receiver unit mounted or mountable in or on said camera and a remote transmitter unit positioned within a predetermined area in which the use of camera is restricted, said receiver unit being arranged to actuate an alarm in response to a control signal received from said transmitter unit when said camera enters said predetermined area.

In one embodiment of the second aspect of the invention, the portable camera may include a transmitter unit which always transmits intermittent signals, for example low power radio signals, and when those signals are detected by one of a plurality of receivers located around and/or within an area where cameras are prohibited, an alarm may be actuated to alert security staff of the presence and approximate location of the concealed camera.

In accordance with a third aspect of the invention, there is provided a location control system for a camera, the system

comprising a first unit mounted or mountable in or on said camera and a remote second unit, at least one of said units being arranged to emit an alarm when the system detects that the camera is being used in a predetermined area in which the use of camera is restricted.

Thus, in locations where a camera can be carried provided it is not used, security staff can detect such use and take appropriate action.

In general, the apparatus and method of the foregoing aspects of the present invention provide a way of allowing cameras to be brought into predetermined areas, but restricts their use either fully or partially whilst within that area.

It is intended to enact laws whereby all portable or concealable cameras must include means for actuating an alarm and/or disabling one or more of its functions in restricted areas. It is expected that a universal protocol will be developed to achieve this.

In accordance with a fourth aspect of the invention, there is provided a location control system for a camera, the system comprising a programmable unit mounted or mountable in or on said camera for controlling, in response to data received from an external unit, a function of said camera when the camera enters a predetermined area in which the use of camera is to be restricted.

In one embodiment of the fourth aspect of the invention, the programmable unit includes a contact device reader for receiving a contact device, such as a smart card or the like, from which data is transferred to enable and/or disable one or more of the camera's functions. The functions of the camera may be enabled by default and disabled, selectively or otherwise, in response to data received from the external programming means. Alternatively, some or all of the functions of the camera may be disabled by default, and enabled, selectively or otherwise, in response to data received from the external programming means.

In a specific exemplary embodiment of the fourth aspect of the invention, the programmable unit may be arranged to

receive data indicative of one or more specific areas within said predetermined location together with camera functions permitted to be enabled in the or each said area, the apparatus comprising a location determining device for determining the location of said camera within said predetermined area and enabling and/or disabling one or more of the functions thereof according to the area in which it is located.

In a preferred embodiment of the fourth aspect of the present invention, the apparatus further comprises means for actuating an alarm in the event that unauthorised camera functions are operated within said predetermined area. The apparatus may itself be equipped with an alarm, or it may transmit a signal for receipt by a remote unit within the predetermined area, in response to which the remote unit actuates an alarm.

The fourth aspect of the present invention extends to a method of restricting or prohibiting use of a portable or concealable camera within a predetermined area, corresponding to the apparatus defined above.

It will be understood that all references herein to "cameras" are intended to encompass "image capturing devices" generally.

Embodiments of the present invention will now be described by way of examples only and with reference to the accompanying drawings, in which:

FIGURE 1 is a schematic block diagram illustrating the various possible functions of apparatus according to a first specific embodiment of the invention; and

FIGURE 2 is a schematic block diagram illustrating the various possible functions of apparatus according to a second specific embodiment of the invention.

Referring to Figure 1, apparatus according to one specific embodiment of the invention comprises a first unit 10 housed within a portable camera (not shown). The unit 10 includes a receiver 12 for receiving low power, short range radio signals 14 emitted by one or more remote transmitter units 16.

The first unit 10 further comprises a disable module 18

which, when actuated, is arranged to disable one or more functions of the portable camera, possibly selectively according to the signal it receives to actuate it. In its simplest form, however, the receiver 12 may be arranged to transmit an activating signal directly to the disable module 18 when one or more signals 14 are received from the remote transmitter unit 16, in response to which the disable module 18 disables the camera altogether or one specific function thereof, such as the flash.

In a more elaborate embodiment, the unit 10 may include a position sensing module 20 which, when actuated, tracks the location of the portable camera. (Over a large area, such as for example a university campus, a GPS module may provide sufficiently accurate location information to track the position of a portable camera). In this embodiment, the signals 14 transmitted by the remote transmitter unit include information regarding the areas in which photography is restricted or prohibited. The signals 14 are received and transmitted to the GPS module 20 which tracks the location of the portable camera. When the camera enters a restricted zone, the position sensing module 20 transmits a signal to the disable module 18 to disable one or more of the functions of the camera accordingly. The GPS module 20 continues to track the camera until it leaves the restricted zone, and then sends another signal to the module 18 to re-enable the functions of the camera.

The unit 10 may additionally or alternatively include an alarm unit 22 which is actuated in response to receipt of one or more signals 14 from the remote transmitter unit 16, to emit an audible and/or visible alarm signal to alert security staff of the presence of a portable camera within a restricted area.

The unit 10 may further include an override unit 24 which can be used to override some or all of the disablements and/or alarm functions of the unit 10 upon entry of, for example, an authorised security code or insertion of a security card or key.

Referring to Figure 2 of the drawings, apparatus according

to another specific embodiment of the invention comprises a unit 100 housed within a portable camera (not shown). The unit 100 includes a smart card reader 102 for receiving a smart card 104 on which is stored data relating to permitted (or otherwise) camera functions within a predetermined area.

In this embodiment, all of the portable camera functions are normally enabled. Thus, the unit 100 further comprises a disable module 106 which, when actuated, is arranged to disable one or more of the functions of the portable camera, in accordance with data stored on the smart card 104. Thus, in its simplest form, in a predetermined area where photography is not permitted, when the smart card 104 is inserted into or swiped through the card reader 102, the disable module 106 disables all of the camera's functions. It may be necessary to insert or swipe another smart card upon exit from the predetermined area in order to re-enable all of the camera's functions. Alternatively, the unit 100 may include a receiver 110 which, in response to receipt of a signal transmitted by a remote transmitter 116 at the exit to the predetermined area, automatically re-enables all of the camera's functions.

In an alternative embodiment, the data read from the smart card may only cause some of the functions of the camera, e.g. the flash, to be disabled in accordance with specific regulations defined for a particular area.

The unit 100 may further comprise a transmitter 112 for transmitting a signal in the event that the camera is used within a predetermined area. The signal is received by a receiver within the area, which actuates an alarm in the event that the camera has not been properly programmed.

In another embodiment of the invention, the data read from the smart card 104 defines specific areas within the predetermined area together with permitted (or non-permitted) camera functions in those areas. The unit 100 comprises a position detector 114 for tracking the position of the camera within the predetermined area, the disable module 106 being arranged to selectively disable (and re-enable) functions of the camera according to its location within the predetermined

area.

Thus, in a specific embodiment of the second aspect of the invention, the apparatus (or the camera) is provided with a slot for reading magnetic stripe cards (like a slot for swiping credit cards). The cards act as controlling units. The apparatus is designed to activate or deactivate the functions of the camera by swiping cards having different configurations written into their magnetic stripes. The magnetic stripe of a card may also contain a code that will lock the camera functions and prevent any further changes to its configuration unless (a) subsequent cards have a matching code or (b) another card with the same code is used to unlock it.

For example, a museum may implement a policy that only cameras of the type described above may be carried into the museum's galleries and that they must be swiped on entry to disable functions such as flash photography. All other cameras must be surrendered on entry. As well as disabling flash, swiping the permitted cameras might limit the resolution of the pictures that can be taken within the gallery. If a visitor wishes to take more detailed pictures, he or she can purchase a photo license card. When swiped through the slot in the camera, the photo license card will re-enable full resolution photography for one photograph only. Depending on the fee paid, the card may be used one or more times. On exit from the gallery, the visitor's camera is swiped again to re-enable the original functions.

Many variations on this these are possible, for example, the camera could be programmed on entry to the museum (by electrical contact with a programming device) in order to install a simple table of museum locations and the functions to be enabled at each. The camera could then control its own capabilities by tracking its position using a built-in position sensor (which could function by any one of several known techniques).

Specific embodiment of the invention have been described above by way of examples only, and it will be apparent to a person skilled in the art that modifications and variations can

be made to the described embodiments without departing from the scope of the invention as defined in the appended claims.

CLAIMS

1. A location control system for a camera, the system comprising a receiver unit mounted or mountable in or on said camera and a remote transmitter unit positioned within a predetermined area in which the use of camera is to be restricted, said receiver unit being arranged to control a function of said camera in response to a control signal received from said transmitter unit when said camera enters said predetermined area.
2. A system according to claim 1, in which the receiver unit comprises a transmitter for transmitting an alarm signal, the transmitter unit comprising a receiver arranged to actuate an alarm in response to receipt of said alarm signal from said transmitter.
3. A system according to claims 1 or 2, in which said transmitter unit transmits periodic control signals, receipt of each of which causes the function of the camera to be controlled for a period of time.
4. A system according to any preceding claim, wherein said receiver unit is arranged to disable a function of said camera in response to receipt of said control signal transmitted by said transmitter unit.
5. A system according to claim 4, wherein said receiver unit is arranged to re-enable said function of said camera in response to receipt of a further control signal transmitted by said transmitter unit.
6. A system according to any of claims 1 to 3, wherein said receiver unit is arranged to enable a function of said camera in response to receipt of said control signal transmitted by said transmitter unit.

7. A system according to claim 6, wherein said receiver unit is arranged to re-disable said function of said camera in response to receipt of a further control signal transmitted by said transmitter unit.
8. A system according to any preceding claim, wherein said transmitter unit is arranged to transmit periodic signals, in response to receipt of which the receiver unit is arranged to control said function of the camera.
9. A system according to claim 4, in which the receiver unit comprises a card reader arranged to re-enable said function of said camera in response to the insertion of a license card into the reader.
10. A system according to claim 4, in which the receiver unit comprises a contact for contacting a licensing device, the receiver unit being arranged to re-enable said function of said camera in response to data transferred by contact with said licensing device.
11. A system according to claim 1, wherein the receiver unit comprises a position detector for tracking the location of the camera, the control signal emitted by the transmitter unit including information regarding one or more zones within said predetermined area in which use of said camera is restricted, said receiver unit being arranged to receive and decode said control signal and, when said position detector determines that said camera has entered the or one of said zones, is arranged to disable said function of the camera.
12. A system according to claim 11, wherein said position detector is arranged to continue to track the location of said camera, the receiver unit being arranged to re-enable said function of the camera, when the position detector determines that the camera has left said zone.

13. A location control system for a camera, the system comprising a receiver unit mounted or mountable in or on said camera and a remote transmitter unit positioned within a predetermined area in which the use of camera is restricted, said receiver unit being arranged to actuate an alarm in response to a control signal received from said transmitter unit when said camera enters said predetermined area.
14. A system according to claim 13, in which the receiver unit comprises a transmitter for transmitting an alarm signal, the transmitter unit comprising a receiver arranged to actuate an alarm in response to receipt of alarm signal from said transmitter.
15. A system according to claims 13 or 14, in which the receiver unit is arranged to control a function of the camera in response to said control signal received from said transmitter unit when said camera enters said predetermined area
16. A location control system for a camera, the system comprising a first unit mounted or mountable in or on said camera and a remote second unit, at least one of said units being arranged to emit an alarm when the system detects that the first unit has entered a predetermined area in which the use of camera is restricted.
17. A location control system for a camera, the system comprising a first unit mounted or mountable in or on said camera and a remote second unit, at least one of said units being arranged to emit an alarm when the system detects that the camera is being used in a predetermined area in which the use of camera is restricted.
18. A location control system for a camera, the system being substantially as herein described with reference to the

accompanying drawings.

19. A method of restricting the use of a camera within a predetermined area, the method comprising the steps of providing a receiver unit in or on said camera, providing a transmitter unit remote from said camera within said predetermined area, and controlling a function of said camera in response to a signal received by said receiver unit from the transmitter unit.
20. A method of restricting the use of a camera within a predetermined area, the method being substantially as herein described with reference to the accompanying drawings.
21. A location control system for a camera, the system comprising a programmable unit mounted or mountable in or on said camera for controlling, in response to data received from an external unit, a function of said camera when the camera enters a predetermined area in which the use of camera is to be restricted.
22. A system according to claim 21, wherein said programmable unit includes a contact device reader for receiving a contact device from which said data is transferred to control said function of the camera.
23. A system according to claims 21 or 22, wherein the programmable unit enables the function of the camera by default, and disables the function of the camera in response to said data received from the external unit.
24. A system according to claims 21 or 22, wherein the programmable unit disables the function of the camera by default, and enables the function of the camera in response to said data received from the external unit.

25. A system according to any of claims 21 to 24, wherein said programmable unit is arranged to receive data indicative of one or more specific zones within said predetermined area, together with data indicative of the camera functions permitted to be enabled in the or each of said zones, the system comprising a position detector for determining the location of said camera within said predetermined area, the programmable unit controlling the function of said camera according to the zone in which it is located.
26. A system according to any of claims 21 to 25, in which an alarm is actuated in the event that unauthorised camera functions are operated within said predetermined area.
27. A camera comprising a receiver unit arranged to control a function of the camera in response to a control signal received from a remote transmitter unit when said camera enters a predetermined area in which use of the camera is restricted.
28. A camera as claimed in claim 27, in which the receiver unit is arranged to determine the position of the camera from said signal, the unit further comprising a programmable memory storing the position of the area in which use of the camera is restricted, the unit being arranged to disable a function of the camera when the determined position corresponds with the stored position.
29. A camera as claimed in claims 27 or 28, in which the receiver unit is arranged to disable said function of the camera whenever said control signal is received.
30. A location control system for a camera, the system being substantially as herein described with reference to the accompanying drawings.



INVESTOR IN PEOPLE

Application No: GB 0201831.5
Claims searched: 1-12 & 19-30

Examiner: Richard Kerslake
Date of search: 16 August 2002

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.T): G4N (NPL,NPPXP); G2A (AAR,AAX)

Int Cl (Ed.7): G03B 29/00; G08B 21/00

Other: Online: WPI, EPODOC, JAPIO

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X,P	EP 1174840 A (SENNHEISER) Abstract	1,4-7,19
X	EP 0505266 A (TELEDIFFUSION) Abstract	1,4-7,19
X	JP 2000333266 A (NIPPON TELEGRAPH) Abstract & Figure 1	1,3,4,8,19, 21,23,27,29 at least

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.